

2020 INHA–BEU DDP Admission Test

Math Examination

<Subjective question> Applicants should write detailed solving process. If there is no solution, you will receive 0 points regardless of the correct answer.

- You can write your solving processes in English or in your native language.
- The point for each question is indicated next to each question number.

1. [5 points]

Find the sum of solutions (köklərin cəmi, сумма решений) to

$$\sqrt{x+2} + \sqrt{8-x} = 4.$$



3. [10 points]

Find the sum of all solutions (bütün köklərin cəmi, сумма всех решений) of

$$\log_2(x^2 + 5x + 12) - \log_2(x + 5) = 1.$$



5. [15 points]

Find $\lim_{x \rightarrow \frac{\pi}{4}} \frac{x - \frac{\pi}{4}}{\cos 2x}$

2. [5 points]

When $a > 0$. Find the minimum value (minimum qiymət, минимальное значение) of

$$\left(a + \frac{3}{a}\right)\left(3a + \frac{1}{a}\right).$$

4. [10 points]

Find $\operatorname{ctg}\left(\frac{\pi}{12}\right)$.

6. [15 points]

When $f(x) = (2x + 1)^{2020}(5x^2 - 7x + 2)$, find $f'(0)$.